

Refer to Figure 19.

2.2.1.2 Competitive Learning Method

Competitive Learning is usually labeled as a neural network paradigm and considered as an alternative approach to statistically motivated methods like K-Means Clustering. However, one may as well view the algorithm as an extended variation of K-Means Clustering. Comparative studies with Competitive Learning have yield good results in several fields.

- Like K-Means Clustering, Competitive Learning does not make any assumptions about the distribution of the data. The number of classes is specified a priori. The method itself controls the initial cluster center distribution. During training, attribute vectors are iteratively presented and the cluster vector that is closest to the attribute vector is updated so that it is even more likely to win the next time the particular attribute vector is presented. Training is stopped after a certain number of iterations, or when the cluster vector only changes marginally.

“Advantages”

- produces same results for identical initial user-supplied conditions
- no assumptions about underlying data and data distribution

“Disadvantages”

- method does not converge in general, but this is compensated with weight decay
- slow training of network
- the theoretical foundation is not as solid as classical statistical methods

Refer to Figure 53a and 53b.